

APPENDIX D:
DRAFT MATL RECLAMATION AND REVEGETATION PLAN

**THIS DOCUMENT IS INCLUDED AS APPENDIX O TO THE MATL MFSA
APPLICATION**

**Montana Alberta Tie Ltd.
230-kV Transmission Line Project from Lethbridge,
Alberta to Great Falls, Montana**

Appendix O

Revegetation and Reclamation Plan

DRAFT

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1. Overview

As part of its MFSA Application, MATL has prepared a draft Revegetation and Reclamation Plan as Appendix K to the “DEQ Environmental Specifications for Montana Alberta Tie Ltd (MATL)” report. The plan is required to specify, at a minimum, seeding mixtures and rates, and procedures to abide by the requirements of ARM 17.20.1902(10). This rule states that following construction work in rangeland areas, the coverage of desirable perennial plant species shall be 30% or more of that of adjacent rangeland of similar slope and topography the year following revegetation, and 90% or more of the coverage of similar adjacent lands within five years. In forested lands, revegetated land other than that in the right-of-way or permanent access roads will be planted with trees so that after five years the stand density of the adjacent forest will be attained at maturity.

This plan also provides the framework to satisfy any identified landowner specifications for their property, as well as any necessary requirements of the General Permit for Storm Water Discharges Associated with Construction Activity, Montana Department of Natural Resources and Conservation requirements for an easement and construction on State lands, U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service and state and county requirements for mitigation associated with construction impacts to waters of the US and the state including streams and wetlands.

2. Objectives

The short term objectives of reclamation are to control erosion and sedimentation, thereby minimizing impacts on adjacent lands and waterways. Properly timed and executed construction practices will mitigate short-term impacts. Long term objectives include erosion and sedimentation control, reclamation of topography, soils and vegetation to a condition equal to that existing prior to disturbance, and reclamation of lands to productive uses consistent with that existing prior to disturbance and applicable land management policies. These objectives will be attained by adherence to practices outlined in the DEQ Environmental Specifications for Montana Alberta Tie Ltd (MATL) document, as well as practices outlined in this reclamation and revegetation plan to the extent feasible (Appendix K to that document). Reasonable alternatives may be substituted or methods employed to the extent agreed upon jointly by MATL and the State Inspector (or DEQ personnel).

3. Reclamation

Clearing, Grading, and Topsoil Handling: Per the standards identified in the “DEQ Environmental Specifications for Montana Alberta Tie Ltd (MATL)”

report, soil disturbance and earth moving will be kept to a minimum and will follow typical procedures to minimize impacts and enhance reclamation. In addition, right-of-way clearing shall be kept to the minimum necessary to meet the requirements of the National Electric Safety Code.

The permanent easement and temporary work space (the construction right-of-way) will be sized to provide space for all construction activities including temporary storage of any graded material and salvaged topsoil. To prevent wind erosion and facilitate reclamation, the roots of existing vegetation will be retained in place to the extent practical.

In any areas where topsoil must be temporarily removed, a minimum of 3 inches and a maximum of 12 inches of topsoil will be salvaged. Topsoil is defined as an upper layer of the soil, composed primarily of a mixture of organic matter and mineral matter; it is alive with microscopic and small macroscopic organisms (McKinney and Schoch 2006). Topsoil will not be mixed or stored with spoil material. In addition, topsoil will not be stripped during excessively wet or inordinately windy conditions.

Following any necessary clearing for work space, these areas will be graded as necessary to create a level work surface for the passage of heavy construction equipment and other vehicles. Any areas graded during construction will be re-graded to reestablish pre-disturbance landforms. Every reasonable effort will be made to complete final grading and installation of permanent erosion control measures as soon as practicable following construction. All disturbed areas (including temporary access roads and other ancillary facilities) will be returned to pre-excavation grades with allowance for settling. If any discontinuity between natural topography and re-graded ground results, MATL will undertake additional grading work to smooth the transition zone. The elevation of the re-graded right-of-way will not be lower than the natural grade.

For disturbed areas where topsoil was removed, redistribution depths will vary between 3 and 12 inches depending upon depth of topsoil stripped. Topsoil will not be mixed with spoil material at any time during soil handling operations and to the extent practical only topsoil will be re-spread on the surface. Topsoil from un-stripped areas will not be utilized to cover adjacent disturbances.

In addition:

- All garbage and debris will be removed from the re-graded areas before topsoil is replaced.
- Any excess rock not buried or blended with the natural terrain will be disposed of at an approved location.

- The length of time that topsoil is stored will be minimized based on the proposed construction schedule. Topsoil redistribution will begin immediately after re-grading (weather permitting).
- Replaced topsoil will be left in a roughened condition to discourage wind and water erosion. Additional erosion control and soil stabilization may be required on steeper slopes, on topsoil easily transported by wind, etc.
- If it is necessary to alleviate compaction, rutting or crusting prior to seeding, the replaced topsoil will be worked with a harrow, disc, spring, tooth, chisel plow or similar implement.
- Fertilization is not recommended since soil will only be stockpiled for a short period of time and fertilizer may enhance weed growth.

In addition, agricultural areas occupied during construction will be ripped, as necessary, in order to remediate compaction. This effort will be sufficient to relieve compaction to its actual depth.

4. Revegetation

In general, revegetation will be conducted on the right-of-way and at other disturbed areas (temporary access roads, staging areas) to restore vegetative cover that is similar to pre-construction condition, or if requested, meet any other reasonable landowner requests once site work is completed. Disturbed areas will be reclaimed by appropriate contouring and replanting with an approved seed mix. All seed mixtures will be certified “weed free”. Noxious weeds will be controlled through implementation of a Noxious and Invasive Plant Control Plan (Appendix F to the “DEQ Environmental Specifications for Montana Alberta Tie Ltd (MATL)” report, which will be approved, before construction, by the county weed boards affected by the project bounds.

5. Description of Existing Vegetation

Agriculture dominates land use within the Project Study Area and is interspersed with patches of non-farmland mostly in the form of low to moderately covered grasslands. In upland communities not converted to dryland farming such as rangeland, coulees, and slopes, the dominant grass communities include grama (*Bouteloua* spp.)-needlegrass (*Stipa* spp.) and wheatgrass (*Agropyron* spp.), and wheatgrass-needlegrass (Kuchler 1964). North of Cut Bank toward the Canadian border where the Foothill Grassland and Milk River Pothole Upland ecoregions exist, the natural vegetation is characterized by blue grama grass, wheatgrass, and, to a lesser extent, June grass (*Koeleria* spp.). A variety of shrubs and herbs also occur, but sagebrush (*Artemesia cana* and *Artemesia tridentata*) are most abundant, and on drier sites yellow cactus and prickly pear (*Opuntia* spp.) can be found. Saline areas support alkali grass (*Puccinellia* spp.), wild barley (*Hordeum* spp.), greasewood (*Sarcobatus*

vermiculatus), saltwort (*Salicornia rubra*) and Pursh seepweed (*Suaeda calceoliformis*). Land that has been converted from dryland farming into the Conservation Reserve Program (CRP) is dominated by wheatgrass (*Agropyron* spp.), alfalfa (*Medicago* spp.), clover (*Trifolium pratense*) and annual weeds (e.g. *Tragopogon dubius*).

The Marias and Teton rivers support the most significant forested riparian habitats in the Project Study Area. Riparian habitats along the Marias and Teton rivers include oxbow marshes and shrub-dominated terraces, but the defining feature is the cottonwood gallery forest that lines the rivers. Despite the fact that these riparian cottonwood forests have been reduced and fragmented by conversion of the floodplain to irrigated agriculture and pasture, they remain the only significant forested habitat within the Project Study Area. The width of the cottonwood gallery forest varies between 30 and 500 feet.

6. Revegetation Mixtures

Revegetation seed mixtures will be agreed upon by MATL and DEQ personnel prior to any revegetation activities taking place on disturbed areas.

Species Selected: Selection of adapted plant species for revegetation is primarily based on existing species occurrence on adjacent lands, and community compositions. Consideration will also be given to establishment potential, growth characteristics, soil stabilizing qualities, availability of seed, and landowner and agency recommendations. MATL will utilize revegetation mixtures based on inventories and knowledge of vegetative types based on field visits conducted to date, and based on any specific recommendations made by the county weed boards.

Species Composition and Rates: The use of native graminoids will be emphasized throughout much of the project area. If noxious weeds invade revegetated areas, control measures, identified in consultation with the county weed board, would be initiated. If any revegetation is required in riparian areas containing woody plants, MATL will plant native shrubs and trees in these locations.

Final seeding and planting rates and species composition will be determined through consultation with DEQ, county weed board members, and land managers on any public lands crossed. Unless otherwise appropriate, approximately 20 pounds per acre of a mix of grasses and forbs seeds should be planted using the broadcast method. A post-seeding pass with a cultipacker would ensure adequate contact of the seed with the soil.

Reseeding will take place in the first appropriate season (Spring or Fall) after construction and at the landowners' discretion. Seeds are best planted in the spring. Seeds planted in the fall are going to be more susceptible to frost-heave and being eaten by rodents. Weed control is also less effective in the fall. Areas disturbed by the Project that supported native vegetation will be revegetated with native species.

Plant Materials: Typically, plant material dealers providing commercial seed will be encouraged to supply seed of local origin. Seed will be purchased in accordance with pure live seed specifications for seed mixtures, emphasizing the use of weed-free certified seed. All seed will be tested to ensure it is noxious weed-free. Seed certification/testing tags will be submitted to DEQ or the counties if requested. Seed will be utilized within 12 months of testing. Containerized or bare root stock will be utilized for native shrub or tree plantings and local stock will be utilized if available.

Seeding Methods: Soil will be conditioned to prepare a good seedbed., Seed will be broadcast utilizing manually operated bucket spreaders, mechanical seed spreaders, blowers or hydroseeders. Seed will be mixed frequently in spreader hoppers to discourage settling. Seeded areas will be chained, harrowed or cultipacked to cover the seed and provide better seed/soil contact. On any areas of steeper slopes, broadcast seeded or hydroseeded areas will be dozer tracked perpendicular to the slope to provide for better seed germination. When hydroseeding is used, seed and mulch will be sprayed in one application. On small areas of revegetation or inaccessible sites, seed will be covered via hand raking.

Construction schedules and seasonal conditions will impact revegetation activities. Seeding and planting will occur as soon after seedbed preparation as possible, either in the fall or spring. Spring seeding, if required, will be conducted as early as possible to maximize the benefits of spring soil moisture.

Planting Methods: In disturbed areas where native shrub or trees need to be planted, MATL will typically utilize stock located as close to the project area as possible. Topsoil salvaged from construction disturbance (assuming no noxious weeds are present) will also be utilized to help promote the re-establishment of existing plant communities.

Tree and shrub planting procedures will follow guidelines set forth in US Forest Service Reforestation Handbook (See FSH 2409.26b, Chapter 700).

7. Erosion Control

In accordance with requirements of the General Permit for Storm Water Discharges Associated with Construction Activity, erosion and sediment control measures will be implemented at disturbed areas to minimize soil movement and improve the potential for revegetation and help ensure successful reclamation. Prior to construction, MATL will prepare a Storm Water Pollution Prevention Plan as part of the application for a General Permit in order to assess the potential for storm water runoff in the areas surrounding the disturbed sites, identify sources of pollutants from the disturbed sites and identify best management practices or control measures to minimize or eliminate these pollutants from entering any surface waters. Drawings of typical techniques that MATL proposes to utilize during construction to control erosion and sediment load to streams and wetlands are presented in Attachment A of this plan (forthcoming from SNC-Lavalin).

8. Monitoring

Revegetated areas will be monitored for a period of at least five years to identify success of reestablishing vegetative cover. This includes monitoring and controlling any noxious weed introduction as discussed further in MATL's Noxious and Invasive Plant Control Plan (Appendix F to the "DEQ Environmental Specifications for Montana Alberta Tie Ltd"). Monitoring efforts identified in this plan will be coordinated with efforts set forth in Appendix F.

Per requirements of ARM 17.20.1902(10), the coverage of desirable perennial plant species will be reviewed against the standard that the revegetative cover be 30% or more of that of adjacent rangeland of similar slope and topography the year following, and 90% or more of the coverage of similar adjacent lands within five years. At the end of the five years, the vegetative cover will be surveyed and documented, and if at that time it is determined that additional monitoring and control will be necessary, DEQ and the appropriate county weed control board will be consulted to determine a plan of action.

Specifically, qualified specialists (identified by MATL) will complete quantitative monitoring on an annual basis to compare adjacent, undisturbed vegetation to the revegetated areas. Evaluation factors will include percent of total vegetative cover, percent litter cover, percent bare ground, species diversity, species composition, woody plant survival (if planted in that area), and presence of noxious weeds. Areas with poor regeneration will be evaluated to identify what reclamation techniques could be utilized to address the problem (address soil fertility, soil erosion, etc.)

9. Reporting

Beginning with the fall/winter of 2007 (November 2007 to February 2008), MATL will prepare and submit a status report to designated state personnel regarding the previous years monitoring activities. The winter 2007 report will detail baseline conditions regarding typical vegetative cover located in the project area, reclamation and revegetation activities accomplished to date, and expected activities for the following year. Each subsequent years report will 1) detail the current status of vegetative cover, as compared to adjacent land cover, 2) summarize activities conducted in the project area during previous years, and 3) outline projected activities for the following year. This effort will be coordinated with reporting requirements for Appendix F (Noxious and Invasive Plant Control Plan). These reports will continue annually from winter 2007 as required by designated state personnel to ensure long-term revegetative measures are met.

Literature Cited

McKinney, M.L. and R.M. Schoch. 2006. Environmental Science, Systems and Solutions. Third Edition. Available at http://environment.jbpub.com/mckinney/interactive_glossary_showterm.cfm?term=topsoil%20. Accessed 24 May 2006.